# *POLICY DIALOGUE*

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## WHAT PROPORTION OF BIRTHS ARE THE RESULT OF CONTRACEPTIVE FAILURE IN BANGLADESH?

*The Bangladesh family planning program has surmounted numerous constraints to achieve a commendable level of contraceptive prevalence with half of married couples current users. While population growth has been slowed, further increases in prevalence are essential to achieve the national goal of replacement fertility. The program is increasingly turning its attention to issues of quality of care to enhance client satisfaction, reduce persisting high discontinuation rates, and respond to the remaining unmet need.*

*A research report based on data from the early 1980's has been published recently] and concluded that about 25 percent of births in Bangladesh each year are due to failed contraception. If still the case, this figure would reflect poorly on the quality of care of the program, particularly counselling of clients, because it implies that using family planning methods does not achieve the desired result. Rather, a failure rate of this magnitude implies that the risk of users falling pregnant is reduced by only a little over half (60%) compared to the risk among non-users. Based on the theoretical effectiveness of methods being used, this is much less than expected.*

*In this paper we present a new estimate, based on the 1993-94 DHS, of the proportion of births resulting from contraceptive failure. This estimate indicates that current failure rates are much lower than the earlier data suggest.*

The steps in estimating contraceptive failure rates are:
1)Estimate the number of women of reproductive age (15-49 years);
2) Use Age Specific Fertility Rates (ASFRS) from a recent reliable source to calculate how many births occur annually;
3) Determine how many currently married women are using the various methods of contraception;
4) Apply estimates of method-specific failure rates to the numbers of users of each contraceptive method, to produce a combined total number of births resulting from overall contraceptive failure; and,
5) The proportion due to contraceptive failure is then the number from (4) divided by the number from (2), multiplied by 100.

Using the most recent data, the proportion is derived as follows:

(1) The 1991 Census shows the total number of women aged 15-49 years as 24,592,000[2] The 1991 figure would have to be increased by about 2 percent per year to account for population growth to the time of the estimate (1993-94).

(2)When the ASFRs from the 1993-94 Bangladesh Demographic and Health Survey (BDHS)3 are applied to the official 1991 Census figures for number of women of reproductive age, the number of annual births is estimated at 2,985,000 or about three million when one year of population growth (1991 t04 1992 ) is taken into account

(3) The number of current users of contraception (9.22 million) is estimated using the 1993-94 BDHS pattern of method-specific prevalence among the estimated 20,245,440 currently married women of reproductive age[5]. By far the biggest category is the 3.5 million oral pill users.

4) When the method-specific failure rates from the BDHS (cumulative failures, as measured by live births, in the first 12 months of use[6]) are applied to the numbers of women using each type of contraception, the estimated number of births expected to occur each year due to contraceptive failure is 272,000.

(5) The proportion of births due to failure then, is the number of births due to failure, i.e., 272,000, divided by the total number of births annually, i.e., 2,985,000, which gives a proportion of 9.1 percent[7].

### *HOW DOES THIS PROPORTION COMPARE INTERNATIONALLY?*

A review of international programs by Ross and Frankenberg [8] suggests that the failure rate[9] from the BDHS for the pill at 1.7 percent was lower than might be predicted from international surveys (average 6.4 percent, ranging from 2.7 - 14 percent). The estimated failure rates for other methods were roughly consistent with international experience, for example, IUDs at 0.3 percent (0.4 percent for T380A); injectable at 1. 1 percent (0-1 percent); condoms at 5.9 percent (0-24 percent); and periodic abstinence at 8.6 percent (8.2-38.4 percent).

**T**he figure of around 9 percent births due to contraceptive failure indicates that the risk of unwanted pregnancy is reduced by about 86 percent compared to that risk for non-users[10.] This is a much greater protective effect than indicated by the Bairagi and Rahman paper. It raises the question of why their figure for contraceptive failure rate is markedly higher.

### *WHAT ACCOUNTS FOR THE DIFFERENCE?*

There are many reasons which account for the difference in the two estimates. One contributing factor is that use effectiveness of contraceptives does not lend itself to easy measurement. Rather as Cleland and Phillips write:

*The measurement Of use-effectiveness is extremely difficult because it has to be established whether or not*

*conception occurred while the couple was still attempting to use the method or whether it ensued after the method had been stopped. As contraceptive use may be intermittent, this distinction is difficult to enforce, and the problem Exacerbated by faulty recall and possible misrepresentation by respondents* [11]

**D**ifficulty in getting accurate information from women about the use of methods is a well -established research problem. Asking women directly usually provides more accurate information on method use, as the BDHS did. The Bairagi and Rahman conclusions are derived from the Matlab Record Keeping System (RKS), a system of two monthly household visits by the ICDDR,B community health workers to every house in their Matlab field site. Information on contraceptive use is collected and linked with other surveillance data on births, and related information.

**B**ased on the RKS, for the reference period (1977-89), Bairagi and Rahman state that 15.1 percent of pill users became pregnant in the first year of use. This figure is not based on asking women who were listed as pill users and became pregnant if they were actually taking the pills at the time they conceived. Rather this estimate relies on the reported acceptance, and assumed use, of family planning at the estimated time of conception. This assumption is undoubtedly optimistic as IUDs and injectables were being strongly promoted in Matlab at the time of this data collection, and

*Matlab pill failure rates are further elevated by the tendency of village workers to dispense pills to women who are unwilling to use any other method and are presumably reluctant to use contraception at all. The tendency for nonusers to accept pills as a courtesy to village workers may explain the high failure rates and poor compliance that have been reported for pill users in Matla* [12].

**W**hile this suggests that the failure rate of 15 percent for pill use from Bairagi and Rahman may not apply nationwide in the 1990s, the BDHS figure of 1.7 percent appears rather low compared to international figures, which tend to show a median rate of about 8 percent [13]. On the other hand it is consistent with most other studies in Bangladesh which tend to range between 0.5 and 2.5 percent.

**A**nother factor contributing to the difference in the estimate is the calculation in the proportion of users of the various methods. Bairagi and Rahman calculate that according to the 1991 CPS survey the proportion of users of pill plus condoms, rhythm, withdrawal, (excluding IUD, injectable, male and female sterilization) amounts to 33 percent of couples. In fact, the report indicates that these contraceptive methods account for only 25.1 percent of all users. Their calculation then assumes a 15 percent failure rate for all these users to produce an annual rate of 4.95 births (33% x 15%) due to failure, per 100 married women. This equates to one in four of their estimated 20 births per 100 married women annually (General Fertility Rate for married women).

**T**hus the method of collecting the information, as well as the calculations on which the conclusions are based, account for most of the difference in Bairagi and Rahman's contraceptive failure rates and those presented here based on the BDHS. However, the lower estimates presented here are not a justification for , complacency. As long as the Bangladesh program depends on methods which require well-informed users, like the pill, its managers will need to be sensitive to the issue of failure rates.

***FACTORS WHICH INFLUENCE EFFECTIVENESS OF METHODS:***

**T**he effectiveness of a contraceptive is influenced by three 'essential factors: the properties of the method or its mode of action [its theoretical effectiveness]; the appropriate provision of the method by a service provider; and its end use by the acceptor. All modern spacing methods - IUDS, implants, injectables, pills -- are highly effective in the prevention of pregnancy. Pregnancy rates of IUDs used in the program are less than 1 per 100 women using the Copper T380A, and 3.0 for the Copper T200B. For pills, approximately 3 women in 100 will become pregnant with, typical use[15] . For acceptors of the injectable, Depo Provera, the risk of pregnancy is less than 1 in 100 women. Sterilization has a low failure rate, well below 1 in 100 men or women.

Condoms and traditional methods, both popular in Bangladesh, have higher 1 `typical use' failure rates than modern spacing methods. Using condoms, 12 of 100 women will become pregnant: using periodic abstinence 20 of 100 women will become pregnant; and 19 of 100 using withdrawal will fall pregnant in a 12 month period.
Human error, either when providing or when using the method, has the greatest effect on failure rates. Methods like surgical sterilization, injectables, and the IUD require little behavioural input from the user. Thus there is little difference between typical use and 'perfect use' [16] or theoretical effectiveness (for example, the pregnancy rate for Copper T380A is 0.8 with typical use and 0.6 with perfect use). Other spacing methods -- such as pill, condom, withdrawal, and periodic abstinence -- demand understanding, memory, persistence and some skill on the part of users. For these methods, there may be a very wide gulf between optimal or theoretical effectiveness -- that is the risk of failure under conditions of perfect compliance -- and actual use-effectiveness under real-life standard of use (Cleland, 1993). In fact, the difference in pregnancy rate for the traditional method, withdrawal, between perfect use and typical use is a difference of 15 pregnancies per 100 women.

**S**ervice providers hold an important key to effective use of methods. Not only are they responsible to provide a method using appropriate procedures, they are also responsible to explain the method until the user fully understands its use. When the method is not explained thoroughly, it is possible for the client to use the method ineffectively which can lead to method failure.

**O**f modern methods, the pill is most effected by inadequate information from the service provider. This is a method which demands habitual client behaviour. One pill must be taken every day, preferably at the same time. When this is not done, method failure is certainly possible, particularly with the low-dose pills.

**A**s the most popular spacing method in the program, special emphasis needs to be put not only on the correct use of pills but the delivery of this method to appropriate users. In a house-to-house delivery system, where there is pressure to meet a target number of acceptors, the pill is easy to deliver -- even to women who have no intention to use. As mentioned earlier, there is evidence that the Matlab use-effectiveness figures for pills were directly affected by a combination of house-to-house delivery and target pressure on the workers.

**E**ven if the client does intend to use the pills when the field worker enrols her as an acceptor, she may fail to use it

properly because of insufficient information or lagging motivation. A 1985 study outlines a disturbing level of non-compliance with pill use (Seaton). The study indicates classic misuse -failure to take the pills daily; skipping p 1 ills when travelling or ill; and not taking them at all if their husbands are away from home. This non-compliance leads to both increased side effects (for example breakthrough bleeding) and unwanted or unplanned pregnancies.

**I**t should be encouraging to the program, however, that more recent studies show a steady improvement in the use of pills. In a 1990 pill use study[17], the majority of women knew it was essential to take a pill daily and what to do if one was forgotten. The most concerning failure was in believing it not necessary to take the pill if the husband was away for any time.

**B**y 1993-94, when the BDHS asked similar questions, there was a further improvement in the use of pills. Several questions were asked of pill users to determine 'quality of use'. Ninety-five percent could show a pill packet and most users took the pills systematically. Only six percent of pill users showed packets in which pills had been taken out of sequence. Eleven percent had not taken pills the two days before the interview. The majority of those (four-fifths) said they were menstruating, while the balance said they had run out of pills, or their husbands were away. This data would indicate that pill taking behaviour has improved considerably over the years -though there is still more improvement to be gained.

**C**ondoms are the most popular barrier method in the national program, regularly used by 3 percent of current users. Though considered a modern method, it is not fool-proof scientific properties which make the condom effective. Rather, as a barrier method , its effectiveness is absolutely dependent on its use at each union. Information from the service provider is essential for appropriate use of condoms, as it is for pills.

**C**oncern should be focused on the pill use effectiveness for modern spacing methods and on traditional methods, as these have a high failure rate in most settings and are currently used by a significant proportion of current users.

*POLICY HIGHLIGHTS:*

**T**he pill will be a popular method in Bangladesh, especially suited to young women of low parity of which there are many millions coming into the-program in the next decade. It is essential that this method be used appropriately by acceptors. This requires that fieldworkers provide accurate information on its use and enrol only those women who truly intend to use the method. It implies that program managers should orient fieldworkers regarding counselling for effective use. The fieldworker's job continues to be of critical importance as the burden of working with clients to ensure appropriate use of methods like the pill rests with them. Program managers should ensure that the counselling skills required by the fieldworkers are integral to their training.

**T**he emphasis of the program needs to be twofold -- to sustain continuous use, as well as to target new acceptors. A system, like targeting new acceptors, negatively influences pill use as these can easily be distributed to nonusers or women who accept only as a courtesy to the fieldworker. While making -short term gains in acceptance rates, target systems do not produce the long-term sustained gains the Bangladesh program needs to meet its goals.

**T**he improved use of pills by acceptors needs to continue its positive trend of the past decade in order to eliminate, to the extent possible, accidental conception. This implies again that fieldworkers need to balance their time between users, to consolidate their appropriate use of pills, and with potential new acceptors.

**T**raditional methods remain popular in Bangladesh and are likely to continue to have relatively high failure rates. This implies that program managers need to focus on two aspects of traditional method use. One is to inform users of traditional methods that there are other contraceptive options, to ensure that they have selected traditional methods because these suit them best -- not because these were the only methods that they have sufficient information to use. Second, the correct use of traditional methods should be taught to users by fieldworkers so that these can be used to maximum effect. It is not a simple task and may require additional information during training for fieldworkers.

**A**s the Bangladesh national program grows, the effective use of methods will continue to be an essential factor in how its success is evaluated. The attention given to this aspect of the program, particularly to ensure that the fieldworkers have the information and training they require to work effectively with clients, will be time well-spent.

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**Endnotes:**

1. Bairagi, R. and M. Rahman, 'Contraceptive Failure Explained', Glimpse, Sept.-Oct. 1995, pp. 5-6, ICDDR,B. And as 'Contraceptive Failure in Matlab, Bangladesh', in international Family Planning Perspectives, Vol.22 (I): 21-25, March 1996.

2 An estimate by Kantner and Noor, modified to account for age misreporting and undercounting, shows a figure of 27,595,000. The accuracy of this figure is not crucial as the same figure is used in both numerator and denominator to calculate proportion. Reference is Kantner, A. 'Evaluation of Final Results from the 1991 Population Census: Implications for Demographic Change in Bangladesh', 1994, Table 5.

3. These figures apply to a period of three years prior to the survey, i.e., 1991-93, with a midpoint of 1992 (BDHS report, Table 3.3, page 27).

4. When the Kantner and Noor adjusted census **figure** is used the number of births is 3.314 million.

5. **BDHS** report, Table 4.6, **p.** 44.

6. BDHS report, Table 4.23,p.61.

7. The proportion is 8.9 percent using the adjusted census figures of Kantner and Noor.

8. Ross, **J.** and E. Frankenberg, (1993), 'Findings from Two Decades of Family Planning Research', The Population Council, page 50.

9. These rates are cumulative failure rates over the first 12 months of use, net of discontinuation for all reasons other than pregnancy, such as side effects. They are calculated from all segments of contraceptive use recorded in the five year month-by-month calendar.

10. This figure is calculated by taking the 9 percent births due to failure among the current 45 percent to couples using family planing (giving a risk of 0.20) and dividing by the 81 percent of births not due to failure among the 55 percent of couples not using family planning (risk of 1.62). Thus risk is reduced from 1.62 to 0.20, or an 86 percent reduction of risk.

11. Cleland, John and James F. Phillips (1993), 'Bangladesh, The Determinants of Reproductive Change', page 35.

12. Cleland et al., 1994, page 57.

13. Moreno, L. and N. Goldman, 1991, 'Contraceptive failure in developing countries', International Family Planning Perspectives 17:pp.44-49.

14. Cleland et.al, 1994.

15. Typical use percentage describes couples who initiate use of a method (not necessarily for the first time), the percentage who experience an accidental pregnancy during the first year if they do not stop use for any other reason. These figures are taken from the 16th edition of CONTRACEPTIVE TECHNOLOGY Hatcher, Robert A., 1994.

16. Perfect use defines couples who initiate use of a method (not necessarily for the first time) and who use it both consistently and correctly.

17. Larson, Ann, Shahidul Islam and S.N. Mitra (1991) 'Pill use in Bangladesh: compliance, continuation, and unintentional pregnancies', Mitra and Associates.

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